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ANALYSIS OF ILLINOIS HOSPITAL DISCHARGE DATA FOR 1989 AND 1990: TRAFFIC ACCIDENTS

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ANALYSIS OF ILLINOIS HOSPITAL DISCHARGE DATA FOR 1989 AND 1990: TRAFFIC ACCIDENTS

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Mr. Larry Lawler, Vice Chairman
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June 1992

prepared by the
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PREFACE

ILLINOIS HEALTH CARE COST CONTAINMENT COUNCIL

The Illinois Health Care Cost Containment Council (IHCCCC) was established in 1984 by the Illinois General Assembly and directed to create a uniform system for the collection, analysis, and distribution of health care cost and utilization data. The Council consists of 11 members representing the following constituencies: consumers (3), insurance companies (2), providers (3), and businesses (3). The members are appointed by the Governor for 3 year terms.

The IHCCCC serves as a resource agency dedicated to assisting regulators, legislators, consumers, providers and purchasers of health care and other health-related state agencies with information vital to the 1) stabilization or reduction of the cost of health care; 2) provision of access to adequate health care; and 3) maintenance and/or improvement of the quality of care provided by health care systems.

This report provides data and information on transportation-related injury cases discharged from Illinois hospitals during 1989 and 1990, using the 1989 and 1990 UB-82 data bases. Specifically, the report contains data and information on number of discharges, average charges, average length of stay, primary injuries, types of accident controlling for demographics (age and gender) and payer type.

The original data were analyzed by the faculty (Dr. Mortimer and staff) at the University of Illinois in conjunction with Council staff. Then the current report was prepared by Mehdi Nassirpour, Chief of the Division of Research and Development. Clerical support as well as preparation of tables and graphs was provided by Ms. Edie Moore.

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EXECUTIVE SUMMARY

The purpose of this report is to provide data and information on transportation-related injury cases discharged from Illinois hospitals during 1989 and 1990, using the 1989 and 1990 UB-82 data bases. Specifically, the report contains data and information on number of discharges, average charges, average length of stay, primary injuries, types of accident controlling for demographics (age and gender) and payer type.

The Illinois Health Care Cost Containment Council (IHCCCC) maintains data on patients discharged from Illinois hospitals which includes information about the hospitals, the patients, expected payment source and various categories of diagnoses and procedures. In addition, hospitals are encouraged to report E-codes (external causes of injuries and poisonings) which indicate the reason patients were admitted to hospitals. These E-codes were used to identify persons who were admitted to the hospital as a result of some form of traffic accident. In this study, the sample consists solely of persons on whom E codes were submitted to the Council.

Based on the data and information contained in the Illinois Health Care Cost Containment Council's hospital discharge data related E-codes, the following results were obtained:

- There were 3,768 injury-related discharges from Illinois hospitals during 1989 and 1990 for which E-codes were submitted. About 8.1 percent of the total injuries were motorcyclists; 2 percent were pedalcyclists; 80.7 percent were occupants of motor vehicles and 9.3 percent were pedestrians.

- Males in particular were more frequently hospitalized as a result of motorcycle, pedalcycle and pedestrian accidents than females, while females were relatively more frequently hospitalized as a result of motor vehicle accidents than were males (88 percent of females versus 75 percent of males).

- Among the patients under the age of 20 years, 65.8 percent were in pedalcycle accidents and 50.4 percent in pedestrian accidents whereas only 17.4 percent of those were in motorcycle accidents and 20.9 percent of those were occupants of motor vehicles.

- Among those aged below 20 years, 57.6 percent of the charges were covered under commercial insurance, 18.7 percent covered by Medicaid, and 16.1 percent covered by the patient. Similarly, among persons aged 20 through 24 years, commercial insurance was billed for 57.1 percent of them, 28.7 percent paid the bill themselves and 7.6 percent of cases were covered under Medicaid. The results are similar for those in age groups 25-39 and 40-59. Beyond the age of 60, 40.5 percent of the charges were billed by commercial insurance and 46 percent by Medicare. Only 7.5 percent of this group were considered self pay.

- About 62.5 percent of the motorcycle accidents did not involve a collision with another vehicle whereas 88.2 percent of the pedalcycle accidents did involve a collision.

- Overall injury to the head (the most frequent site of injury) occurred in 46.6 percent of these motor vehicle accident victims. Injuries to the neck, trunk areas and lower limb area occurred about half as frequently as to the head. Injuries occurred least often to the upper limbs. The distribution of injuries differs among the types of accidents. Among victims of motorcycle accidents, injuries to the lower limb are the most frequent with somewhat lower frequency of injuries to the head and relatively much lower frequencies to the neck and trunk and upper limbs. Pedalcyclists received slightly over half their injuries to the head and 34.8 percent to the lower limb area. Almost half of the primary injuries received by occupants of motor vehicles

were also to the head, with 27.5 percent of them having the primary site as the neck and trunk. The primary site of injury for pedestrians was the lower limbs with a substantial proportion (35.4 percent) of injuries occurring to the head.

- Average hospital length of stay for pedestrians was 5.4 days, which was greater than that of any other group, although motorcyclists had a mean length of stay of 4.7 days. Since hospital charges are closely related to the length of stay or number of patient days, the average hospital charges for pedestrians was highest ($7,080) and those for occupants of motor vehicles was the least ($4,567). A graphic presentation of average total charges is shown in Figure 8.

- Overall mean charges for the lower limb injuries were greatest ($8,946). The greatest charges for head injuries and neck and trunk injuries were incurred by pedestrians, for upper limb injuries for pedalcyclists but almost equally by pedestrians, for lower limb injuries by motorcyclists. The most frequent primary site of injury was to the head with 1,112 cases in that category. This is more than twice as frequent as that associated with any of the other bodily areas, and indicates the significance of head injuries in all types of motor vehicle accidents.

At the present time, Illinois does not have a law which requires all motorcyclists to use helmets for head protection in crashes. The present data again substantiate the value of protective head devices for motorcyclists and pedalcyclists, at least, to utilize protective devices for the head. Occupants of motor vehicles are unlikely to wear helmets or other protective devices for the head, but increased use of restraint systems, which are found in all motor vehicles today, would greatly reduce the incidence of head injury. Since restraint systems, such lap and shoulder belts in motor vehicle in Illinois are used only about 40 percent of the time it would be expected that substantial savings could be achieved by reductions in upper extremity injuries of occupants of motor vehicles if drivers and passengers made more use of restraint systems.

Despite limitations, the data are useful for describing trends in inpatient hospitalization for traffic-related injuries, serving as an epidemiologic surveillance tool, and estimating costs associated with injuries. It is evident from this study, hospital discharge data represent an important and usually the only population-based data on injuries. Systematic, uniform, and reliable reporting of E-codes in these databases would provide essential information for monitoring trends and patterns of injury, defining subgroups of the population at high risk of injury, and in developing and evaluating injury prevention programs.

ANALYSIS OF ILLINOIS HOSPITAL DISCHARGE DATA
FOR 1989 AND 1990: TRAFFIC ACCIDENTS

Introduction

The purpose of this report is to provide data and information on transportation-related injury cases discharged from Illinois hospitals during 1989 and 1990, using the 1989 and 1990 UB-82 data bases. Specifically, the report contains data and information on number of discharges, average charges, average length of stay, primary injuries, types of accident controlling for demographics (age and gender) and payer type.

The Illinois Health Care Cost Containment Council (IHCCCC) maintains data on patients discharged from Illinois hospitals which includes information about the hospitals, the patients, expected payment source and various categories of diagnoses and procedures. In addition, hospitals are encouraged to report E-codes (external causes of injuries and poisonings) which indicate the reason patients were admitted to hospitals. These E-codes were used to identify persons who were admitted to the hospital as a result of some form of traffic accident. In this study, the data consist of persons on whom E-codes were submitted to the Council during 1989 and 1990. Since the number of reported E-codes related traffic accidents 1989 was small, the 1990 reported E-codes were added to the 1989 data in order to increase validity the present study.

Data Concerns (E-Codes)

During 1989 and 1990, a total of 5,535 persons were discharged from hospitals in Illinois who were identified as having been involved in some form of transportation accident on the bases of E-codes (E-codes 800 to 848). These accidents include railway accidents, motor vehicle traffic accidents, motor vehicle non-traffic accidents, accidents occurring in water and air transportation.

Table 1 shows the distribution of these cases by the type of transportation accident which caused them to be admitted to the hospital. The largest proportion of these accidents were admitted to the hospitals due to motor vehicle traffic accidents, which comprised a total of 4,699 discharges (see Figure 1). Based on the Illinois Department of Transportation (IDOT) data, it is quite apparent that the number of cases that were identifiable from the hospital discharge data through the use of E-codes is much less than the total number of persons who were admitted as a result of accidents in transportation.

There are approximately 1.6 million patients discharged from Illinois hospitals each year. The Illinois Department of Transportation (IDOT) reports that about 160,000 persons were injured in motor vehicle traffic accidents in 1990 (IDOT, 1991), and about 29,000 were "incapacitated" (class A injury) and should have been hospitalized as a result. This number can be compared with the figure shown in Table 1 (4,699) which, is for two years--namely 1989 and 1990. This suggests that only about eight percent of persons who entered hospitals in 1989 and 1990 were identifiable on the hospital data as injury-related discharges. In addition, it is uncertain whether the sample 8 percent is a true representative of the total injured population. This is a limitation of these data in that they are an incomplete listing of persons who were injured in a traffic accident and discharged from Illinois hospitals.

There is reason to believe that the coding by hospitals is improving because, in 1989, 2,115 motor vehicle related cases were identified by E-codes while in 1990 this number rose to 3,420. It is anticipated that hospitals will provide increasingly complete data so that a greater proportion of persons injured in Illinois can be identified among hospital patients. While 4,699 cases were identifiable as having been hospitalized because of their involvement in a motor vehicle traffic accident, the coding was not quite sufficient to indicate the nature of their involvement such as, if they were a pedestrian, a pedalcyclist, a motorcyclist, or an occupant of another vehicle. In 1989, a total of 1,582 cases and, in 1990, a total of 2,186 cases were identified by their participation in the traffic system which led them to receive an injury. Therefore, there were a total of 3,768 discharges from hospitals in Illinois in 1989 and 1990 known to be involved in a traffic accident and about whom information on their participation in the accident was available. The present report is based on these 3,768 hospital discharges with injury-related E-codes.

Data from 149 hospitals which reported E-codes were used in the study. While some hospitals reported only one case involving a motor vehicle traffic accident, one hospital reported 336 cases. The hospitals were distributed throughout various parts of the State which suggest that the data might be fairly representative of injury cases occurring across the State. Nevertheless, the representativeness of these data cannot be adequately ascertained at this time. However, these data provide the largest data set of hospital discharge information concerned with motor vehicle traffic accidents that have been accumulated in Illinois and for this reason they are a potentially valuable resource.

Although the quality of data has improved over the last three years, a large number of hospitals in Illinois do not report E-codes due to the following reasons: 1) Hospitals were not allowed to report E-codes until April, 1990; 2) Hospitals include E-codes in the data as one or more of five possible discharge diagnoses; and 3) Since E-codes are not used as a basis for reimbursement, they receive low priority in selection process of five ICD-9CM codes reported. E-coding rates are the lowest among selected groups of patients, specially among severely injured patients who are characterized by many diagnoses. In Illinois, reporting of E-codes is inconsistent across hospitals and patients.

RESULTS

Table 2 through Table 11 presents descriptive statistics on traffic accidents (motorcycle, pedalcycle, motor vehicle, and pedestrian) controlling for demographic characteristics, payer type, type of injuries, average length of stay and average charges in Illinois.

Year by Type of Accident

Table 2 and Figure 2 show the distribution of the four types of accidents in 1989 and 1990. It is evident that there is a close correspondence in the percent of each type of accident which occurred in each of the two years providing some indications of the general reliability of these data.

Type of Accident by Gender

Table 3 and Figure 3 show the frequency and percentage distributions of four types of accidents by gender. Males in particular are more frequently hospitalized as a result of motorcycle, pedalcycle and pedestrian accidents than females, while females are relatively more frequently hospitalized as a result of motor vehicle accidents than are males (88 percent of females versus 75 percent of males).

Type of Accident by Age

Table 4 shows the distribution of the type of accident by age. There are substantial differences in the age distribution by the type of accident. Among the patients under the age of 20 years, 65.8 percent were in pedalcycle accidents and 50.4 percent in pedestrian accidents whereas only 17.4 percent of those were in motorcycle accidents and 20.9 percent of those were occupants of motor vehicles (see Figure 4). Persons between the ages of 20 and 39 were overrepresented in motorcycle accidents and underrepresented in the pedalcycle and pedestrian accidents. Those over the age of 60 were less involved in motorcycle and pedalcycle accidents and mostly involved as occupants of motor vehicles or pedestrians.

Traffic Accident by Primary Payer by Age Category

Table 5 shows the distribution of the age of the patients involved in these traffic accidents by the expected payment source. The table shows that among those aged below 20 years, 57.6 percent of the charges were covered under commercial insurance, 18.7 percent were covered by Medicaid and 16.1 percent were covered by the patient. Similarly, among persons aged 20 through 24 years, commercial insurance was charged for 57.1 percent of them, 28.7 percent paid the bill themselves and 7.6 percent of cases covered under Medicaid (see Figure 5). The results are similar for those in the age group 25-39 and for the group aged 40-59, although it should be noted that as the groups get older more of the payments are made by commercial insurance. Beyond the age of 60, 40.5 percent of the charges were paid by commercial insurance and 46 percent by Medicare. Only 7.5 percent of this group were expected to pay the bill themselves. Thus, commercial insurance is the primary source of payment for those under the age of 60 and Medicare for those aged 60 or more. Medicaid was most often charged for those aged 20 or less.

Type of Collision by Type of Accident

Table 6 shows the distribution of non-collision and collision accidents by type of traffic accident. A non-collision accident is one in which the initial accident does not involve a collision with another vehicle, pedalcyclist or pedestrian but may involve striking an object at the roadside or is a result of the vehicle rolling over. Figure 6 shows that 62.5 percent of the motorcycle accidents did not involve a collision with another vehicle whereas 88.2 percent of the pedalcycle accidents did involve a collision. Persons who were hospitalized as a result of an accident in which they were an occupant of a motor vehicle incurred the injury as a result of non-collision and collision accidents in about equal proportions.

Length of Hospital Stay by Type of Accident

Table 7 shows the distribution of the length of stay of the patients in the hospital by the type of accident in which they were involved. The most notable feature of this table is that those involved in pedestrian accidents stayed in the hospitals exceeding seven days more frequently than would be expected by chance and to a lesser extent the same is true of those involved in motorcycle accidents.

Hospital Charges by Type of Accident

Table 8 shows the distribution of the total hospitalization charges by the type of accident in which the patients were involved. The results here are analogous to those for the length of stay, which is to be expected, because length of stay and the hospitalization charges are strongly correlated. Table 7 shows primarily that 27.8 percent of those involved as pedestrians had hospital charges of $8,000 or more and were significantly overrepresented in that category. Similarly, 22.7 percent of motorcyclists had hospital charges between $5,000 and $7,999 and were overrepresented among the accident types incurring that distribution of charges.

Primary Type of Injury by Type of Accident

Table 9 shows the distribution of the four primary injury areas by the type of accident in which the patients were involved. Overall it can be seen that injury to the head occurred in 46.6 percent of these motor vehicle accident victims, which is the most frequent site of injury (see Figure 7). The injuries to the neck and trunk areas and the lower limb area occurred about half as frequently as to the head. Injuries occurred least often to the upper limbs. The distribution of injuries differs among the types of accidents.

Among victims of motorcycle accidents, injuries to the lower limb were the most frequently reported with somewhat lower frequency of injuries to the head and much lower frequency to the neck and trunk and upper limbs. Pedalcyclists received slightly over half their injuries to the head and 34.8 percent to the lower limb area. Almost half of the primary injuries received by occupants of motor vehicles were also to the head, with 27.5 percent of them having the primary site as the neck and trunk. The primary site of injury to pedestrians was the lower limbs with a substantial proportion (35.4 percent) occurring to the head. In general, motorcyclists, pedalcyclists and pedestrians received most of their injuries to the head and lower limbs while occupants of motor vehicles received most of their injuries to the head and the neck and trunk.

Mean Age, Mean Length of Stay and Mean Hospital Charges by Type of Accident

Table 10 shows frequency and mean distributions of age of patients, average length of stay and average charges for those injured in the four types of traffic accidents. The mean age of pedalcyclists was less than any other group while it was greatest for those who were occupants of motor vehicles. The mean length of stay for pedestrians was 5.4 days, which was greater than that of any other group, although motorcyclists had a mean length of stay of 4.7 days. Since hospital charges are closely related to the length of stay or number of patient days, the average hospital charges for pedestrians was highest ($7,080) and those for occupants of motor vehicles was the least ($4,568). A graphic presentation of average total charges is shown in Figure 8.

In addition, Table 10 shows frequency of discharges and average total charges for each of the four types of accidents by the type of collision (non-collision, collision). The average charge of non-collision accidents was $4,499 while for those involving a collision it was $5,366 (19 percent greater). As expected that in every case the non-collision accidents resulted in lower hospitalization charges. The table also shows that the greatest mean charge was incurred by motorcyclists in collision accidents and followed closely by pedestrians who were struck by a vehicle. Among the non-collision types of accidents the ones involving motorcyclists had the greatest hospitalization charges.

Mean Total Charges by Primary Injury Area and Type of Accident

Table 11 and Figure 9 show the mean charges for each of the four major types of accidents associated with major injury occurring to the head, the neck and trunk, the upper limb and the lower limb and for the cases where the major injury area was not indicated. Overall, the mean charge was $4,962. The overall mean charges for each of the primary injury areas are also shown and indicate that those for the lower limb ($8,946) were greatest. The table shows that the greatest charges for head injuries and neck and trunk injuries were incurred by pedestrians, for upper limb injuries for pedalcyclists but almost equally by pedestrians, for lower limb injuries by motorcyclists. Standard deviations (not reported in the report) associated with each mean clearly indicate that these distributions are positively skewed. This means that there were some charges which were substantially greater than indicated by the means. It is particularly noticeable in the head injury data for motorcyclists, pedalcyclists and pedestrians. The large variation in the charges for these three groups indicates that head injuries were probably the most costly for at least a few cases among the motorcyclists, pedalcyclists and pedestrians.

The table also shows that the most frequent primary site of injury was to the head with 1,112 cases in that category. This is more than twice as frequent as that associated with most of the other bodily areas, and indicates the significance of head injuries in all types of motor vehicle accidents. Among motorcyclists, injuries to the lower limb were most frequent, closely followed by those to the head. Among pedalcyclists, head injuries were the most frequent followed by those to the lower limbs. Among occupants of motor vehicles, head injuries were by far the most frequent followed by those to the neck and trunk, while among pedestrians, injuries to the lower limb were most frequent followed by those to the head.

DISCUSSION

The results of the analysis of the 3,768 patients discharged from hospitals in Illinois who were victims of traffic accidents provide an initial indication of the hospitalization charges associated with this form of trauma. The data represent less than 8 percent of persons who were admitted to hospitals in Illinois as a result of motor vehicle trauma, and the distributions of many of the variables may not be representative of the population of patients discharged from Illinois' hospitals as a result of traffic accidents. The present data are based on information available from 1989 and 1990. There is every reason to believe that the percentage of patients discharged whose records will be coded in a manner to allow identification of the reason for their admittance, by E-codes, will increase. Certainly, there was a substantial increase in the number of cases coded in 1990 compared with 1989. Hopefully this trend will continue so that more effective analyses of the data can be made in subsequent years.

Although it is difficult to estimate the true representativeness of the sample, there is some additional confidence in the representation of these data in that the distribution of the age of these patients by the type of accident in which they were involved follows much along the lines that are already known. For example, the very youngest group would be expected to be involved as pedalcyclists and pedestrians and indeed they are represented highly in those two groups, whereas the oldest would be expected to be represented as pedestrians and occupants of motor vehicles, as was indeed the case. The middle-aged group tend to be involved in motorcycle accidents and to a lesser extent as pedestrians and this finding is also upheld (Table 4). The severity of non-collision accidents is also indicated (Table 6) in that 46.5 percent of the patients in this sample were admitted because of such an event.

The distribution of injuries was also different according to the type of accident in which they were involved. However, motorcyclists, pedalcyclists and pedestrians had the majority of their serious injuries to the lower limbs and the head which differ from those of motor vehicle occupants whose injuries were primarily to the head and neck and trunk regions. These distributions are similar to those that have been previously reported in the literature (see IDOT report). In general, upper limb injuries are the least frequent in these accident victims.

The sources that were charged for the hospital expenses varied by the age of the patient. The major modes of designated payment were through commercial insurance or self-administered insurance programs, Medicare, Medicaid and by payments made by the individuals themselves (self pay). Another category labeled "other" involved 4.5 percent of all of the charges and may include a variety of potential sources such as insurance companies that were not on the State of Illinois list of insurers. Since about 30 percent of patients under the "other" category (Table 5) who were under 20 years old, it appears that a substantial portion of those charges were probably not collectible by the hospital. If that is the case they can be considered as an out of pocket expense of the hospital which eventually is charged to other users of the facility in increased fees. Of additional interest is the finding that 9.9 percent of the charges were expected to be paid by Medicaid and another 6.6 percent by Medicare, which indicates that a little under 17 percent of all the charges were paid by the taxpayer. As expected, persons under the age of 20 formed by far the largest group whose hospitalization charges were covered under Medicaid whereas the expenses of those aged 60 or more were covered primarily by Medicare. It should be the majority of Medicaid recipients are under 20 years old.

The mean total charges of pedestrians for the hospitalization was greater than for any other group followed by those incurred by motorcyclists. They were least for occupants of motor vehicles. This suggests that the severity of the injuries received by motor vehicle occupants was less than for the other groups. This is supported by the review of the components of the total charges which indicates that the facilities in the hospital treating the occupants of motor vehicles were generally less indicative of the use of strenuous medical procedures, such as the use of operating rooms, than with other classes of accidents.

The vulnerability of motor vehicle accident victims to head injury is shown by these data for all classes of accidents that were studied. From the 3,768 cases in this sample it was possible to identify the major bodily area where the injury occurred in 2,407 cases and for 1,122 the primary site of injury was the head. This implies that about 47 percent of the traffic accident victims incurred their most serious injury to the head region and shows the vulnerability of the head to injury in traffic accidents.

Lower limb injuries have been known to be a problem among motorcyclists injured in traffic accidents and these data again show that steps need to be taken to better design motorcycles to protect the legs of their riders, both passengers and operators.

Pedestrians are also vulnerable to injuries to the lower limbs. The only reasonable way to reduce these injuries is to reduce pedestrian accidents. An almost equally elusive approach is to improve the design of the front of motor vehicles.

The mean hospitalization charge in this sample of 3768 cases was $4,962. According to the Illinois Department of Transportation, there were 1589 persons killed in traffic accidents in 1990 and 157,325 injured. In 1989 comparable figures were 1,748 fatalities and 174,080 injured. If one assumes that at least 52,000 persons were admitted to hospitals as a result of a motor vehicle traffic accident (i.e., all class A and half of class B injured persons), which represent about 3.5 percent of all hospital admissions in Illinois in a year, it is estimated that hospitalization costs amounted to about 0.26 billion dollars per year, as an average in 1989 and in 1990. Although there has been a steady reduction in the rate of traffic accidents in Illinois, it is unlikely that a reduction in hospitalization costs of persons injured in traffic accidents will be accomplished in the future, since hospital costs are known to rise far more rapidly than inflation.

Despite limitations, the data are useful for describing trends in inpatient hospitalization for traffic-related injuries, serving as an epidemiologic surveillance tool, and estimating costs associated with injuries. It is evident from this study, hospital discharge data represent an important and usually the only population-based data on injuries. Systematic, uniform, and reliable reporting of E-codes in these databases would provide essential information for monitoring trends and patterns of injury, defining subgroups of the population at high risk of injury, and in developing and evaluating injury prevention programs.

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REFERENCES

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TABLES

Table 1. Distribution of Patients by Type of Transportation Accident in Illinois: 1989 - 1990

Type of Accident	Frequency	Percent
Railway	10	0.2
Motor Vehicle Traffic	4699	84.9
Motor Vehicle Non-Traffic	222	4.0
Water Transport	27	0.5
Air Transport	10	0.2
Other	564	10.2

Table 2. Frequency and Percentage Distribution of Types of Traffic Accidents by Year in Illinois: 1989 - 1990

	ACCIDENT				
Year	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
1989	113 (7.1)	28 (1.8)	1330 (84.1)	111 (7.0)	1582 (100)
1990	191 (8.7)	48 (2.2)	1709 (78.2)	238 (10.9)	2186 (100)
Total	304 (8.1)	76 (2.0)	3039 (80.7)	349 (9.3)	3768 (100)

Table 3. Frequency and Percentage Distribution of Type of Accident by Gender in Illinois: 1989 - 1990

	ACCIDENT				
Gender	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
Female	37 (12.2)	14 (18.4)	1410 (46.4)	132 (37.8)	1593 (42.3)
Male	267 (87.8)	62 (81.6)	1629 (53.6)	217 (62.2)	2175 (57.7)
Total	304 (100)	76 (100)	3039 (100)	349 (100)	3768 (100)

Table 4. Frequency and Percentage Distribution of Type of Accident by Age in Illinois: 1989 - 1990

	ACCIDENT				
Age	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
<20	53 (17.4)	50 (65.8)	634 (20.9)	176 (50.4)	913 (24.2)
20-24	61 (20.1)	5 (6.6)	455 (15.0)	22 (6.3)	543 (14.4)
25-39	143 (47.0)	13 (17.1)	986 (32.4)	67 (19.2)	1209 (32.1)
40-59	40 (13.2)	7 (9.2)	598 (19.7)	43 (12.3)	688 (18.3)
>=60	7 (2.3)	1 (1.3)	366 (12.0)	41 (11.7)	415 (11.0)
Total	304 (100)	76 (100)	3039 (100)	349 (100)	3768 (100)

Table 5. Frequency and Percentage Distribution of Transportation Accidents by Age of Patients and Principal Payer in Illinois: 1989 - 1990

	ACCIDENT					
Age	Commercial	Medicare	Medicaid	Self Pay	Other	Total
<20	526 (57.6)	11 (1.2)	171 (18.7)	147 (16.1)	58 (6.3)	913 (100)
20-24	310 (57.1)	9 (1.7)	41 (7.6)	156 (28.7)	27 (5.0)	543 (100)
25-39	780 (64.5)	21 (1.7)	116 (9.6)	250 (20.7)	42 (3.5)	1209 (100)
40-59	496 (72.1)	15 (2.2)	39 (5.7)	94 (13.7)	44 (6.4)	688 (100)
>=60	168 (40.5)	191 (46.0)	6 (1.4)	31 (7.5)	19 (4.6)	415 (100)
Total	2280 (60.5)	247 (6.6)	373 (9.9)	678 (18.0)	190 (5.0)	3768 (100)

Table 6. Frequency and Percentage Distribution of Non-Collision/Collision by Type of Traffic Accidents in Illinois: 1989 - 1990

	ACCIDENT				
	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
Non-Collision	190 (62.5)	9 (11.8)	1554 (51.1)	N/A	1753 (46.5)
Collision	114 (37.5)	67 (88.2)	1485 (48.9)	349 (100)	2015 (53.5)
Total	304 (100)	76 (100)	3039 (100)	349 (100)	3768 (100)

Table 7. Frequency and Percentage Distribution of Average Length of Stay (LOS) by Type of Accident in Illinois: 1989 - 1990

	ACCIDENT				
LOS Group	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
<3 Days	124 (40.8)	42 (55.3)	1474 (48.5)	151 (43.3)	1791 (47.5)
3-4 Days	73 (24.0)	17 (22.4)	726 (23.9)	60 (17.2)	876 (23.3)
5-7 Days	62 (20.4)	10 (13.2)	540 (17.8)	58 (16.6)	670 (17.8)
>7 Days	45 (14.8)	7 (9.2)	299 (9.8)	80 (22.9)	431 (11.4)
Total	304 (100)	76 (100)	3039 (100)	349 (100)	3768 (100)

Table 8. Frequency and Percentage Distribution of Total Hospitalization Charges by Type of Accident In Illinois: 1989 - 1990

	ACCIDENT				
Cost Group	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
Below $3000	108 (35.5)	36 (47.7)	1438 (47.3)	137 (39.3)	1719 (45.6)
$3000-$4999	73 (24.0)	18 (23.7)	828 (27.2)	69 (19.8)	988 (26.2)
$5000-$7999	69 (22.7)	11 (14.5)	407 (13.4)	46 (13.2)	533 (14.1)
Above $7999	54 (17.8)	11 (14.5)	366 (12.0)	97 (27.8)	528 (14.0)
Total	304 (100)	76 (100)	3039 (100)	349 (100)	3768 (100)

Table 9. Frequency and Percentage Distribution of Primary Injury by Type of Accident In Illinois: 1989 - 1990

	ACCIDENT				
Primary injury	Motorcycle	Pedalcycle	Motor Vehicle	Pedestrian	Total
Head	80 (32.7)	34 (51.5)	911 (49.9)	97 (35.4)	1122 (46.6)
Neck & Trunk	34 (13.9)	5 (7.5)	501 (27.5)	32 (11.6)	572 (23.7)
Upper Limb	38 (15.6)	4 (6.1)	167 (9.2)	21 (7.7)	230 (9.6)
Lower Limb	92 (37.7)	23 (34.8)	245 (13.4)	124 (45.2)	484 (20.1)
Total	244 (100)	66 (100)	1824 (100)	274 (100)	2408 (100)

Table 10. Frequencies and Mean Values of Age of Patient, Length of Stay and Total Charges by Accident Type in Illinois: 1989-1990

	TOTAL		MOTORCYCLE		PEDALCYCLE		MOTOR VEHICLE		PEDESTRIAN	
	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean
Age	3768	33.0	304	29.3	76	20.0	3039	34.4	349	26.9
LOS	3768	4.1	304	4.7	76	4.2	3039	3.9	349	5.4
Charges	3768	$4962	304	$6337	76	$5539	3039	$4568	349	$7080
Non-collision (Charges)	1753	$4499	190	$5714	9	$4619	1554	$4349	N/A	N/A
Collision (Charges)	2015	$5366	114	$7376	67	$5663	1485	$4796	349	$7081

Table 11. Frequencies and Mean Values of Total Charges by Primary Injuries and Type of Accident in Illinois: 1989-1990

	TOTAL		MOTORCYCLE		PEDALCYCLE		MOTOR VEHICLE		PEDESTRIAN	
	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean
Head	1122	$4613	80	$6089	34	$5568	911	$4098	97	$7902
Neck & Trunk	572	6082	34	5964	5	2972	501	6044	32	7288
Upper Limb	230	4806	38	4547	4	5469	167	4767	21	5459
Lower Limb	483	8946	92	9322	22	6884	245	9207	124	8518
Other/Missing	1361	3393	60	3436	11	3955	1215	3348	75	4006

FIGURES

Figure 1: Percent Distribution of Patients by Type of Transportation Accident in Illinois: 1989 - 1990

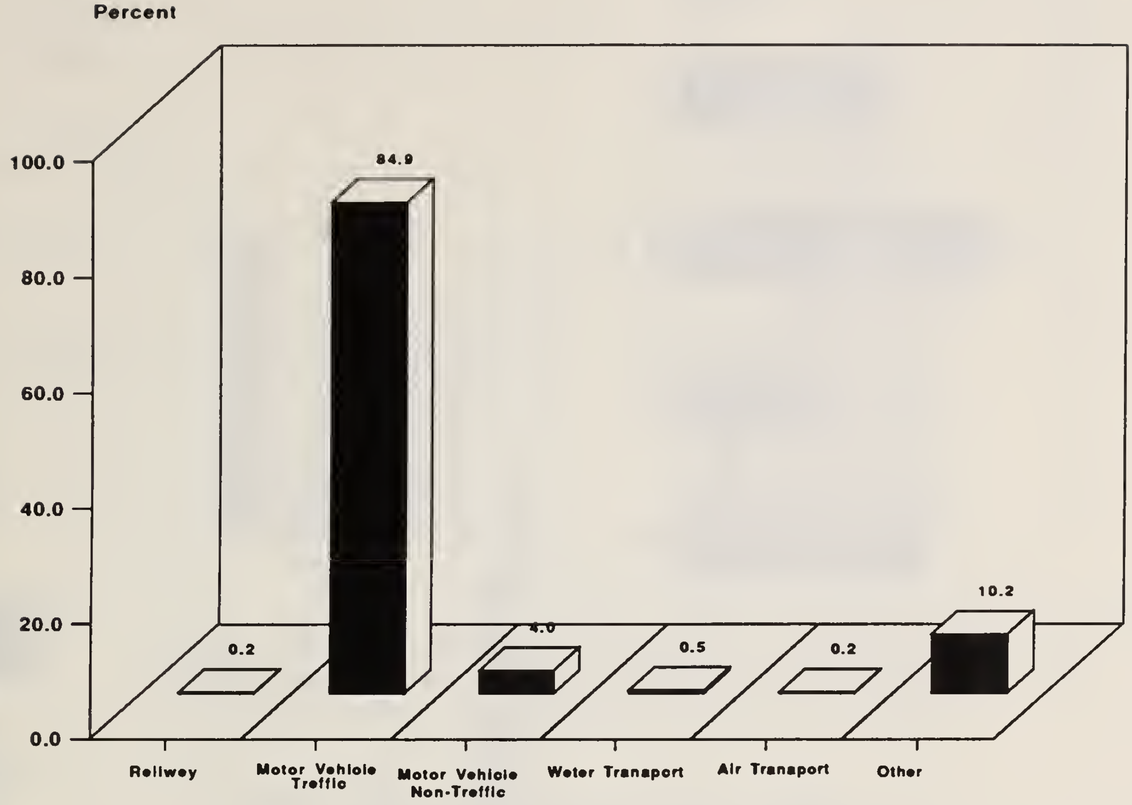


Figure 2: Percent Distribution of Types of Traffic Accidents by Year in Illinois: 1989 - 1990

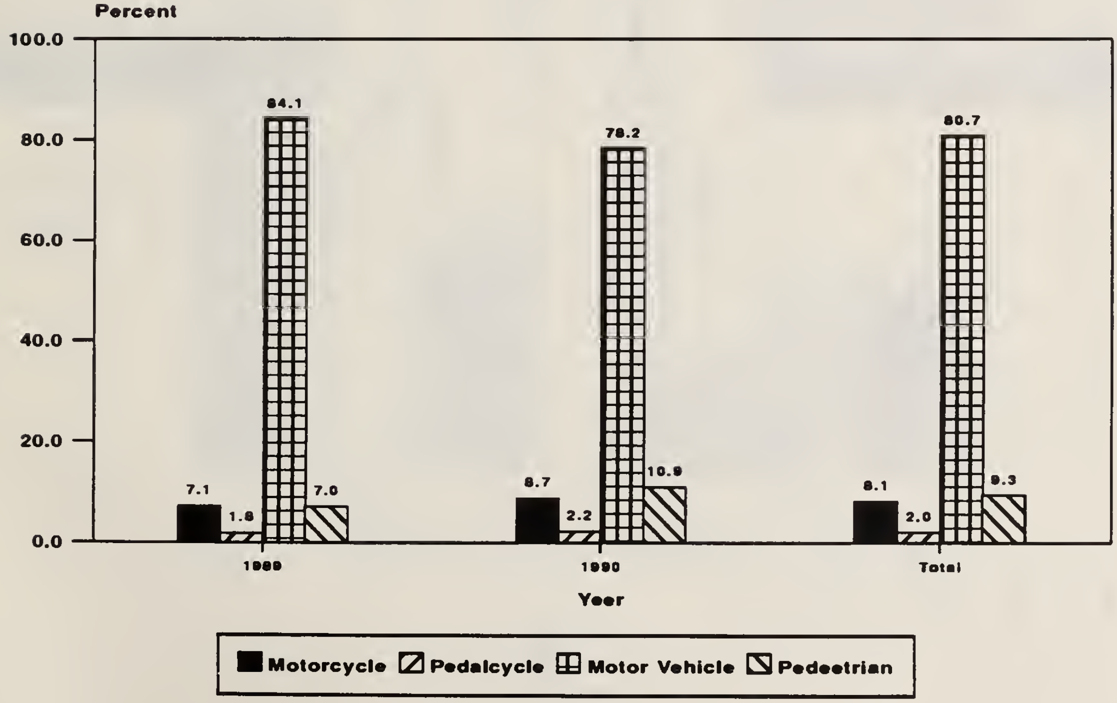


Figure 3: Percent Distribution of Types of Traffic Accidents by Gender in Illinois: 1989 - 1990

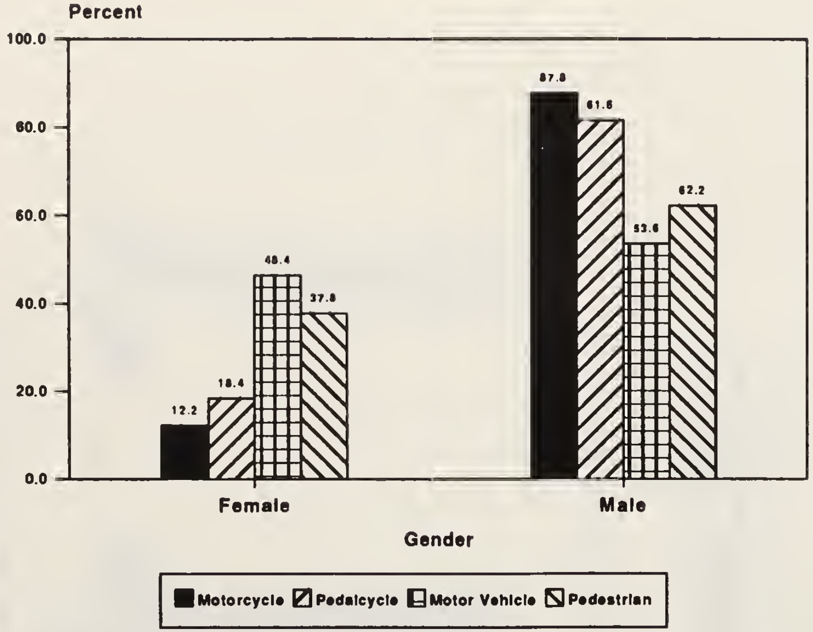


Figure 4: Percent Distribution of Accidents by Age in Illinois: 1989 - 1990

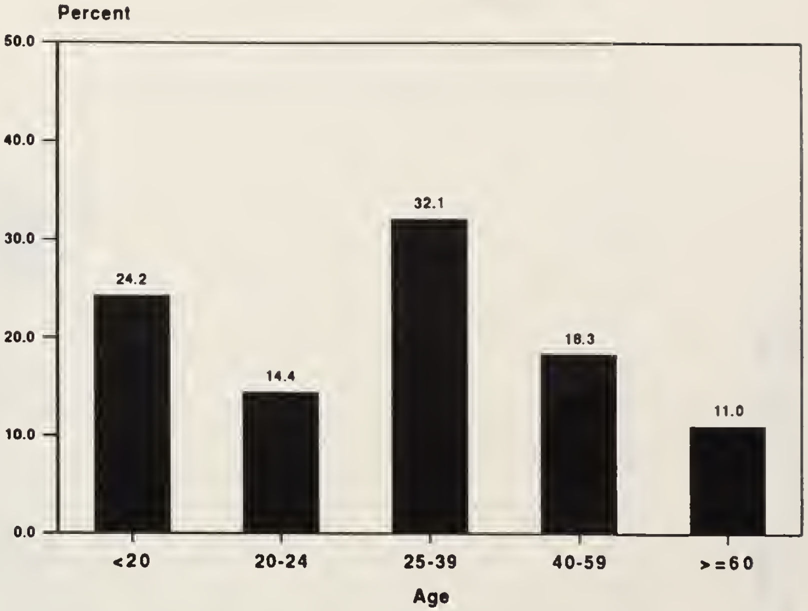


Figure 5: Percent Distribution of Transportation Accidents by Principal Payer in Illinois: 1989 - 1990

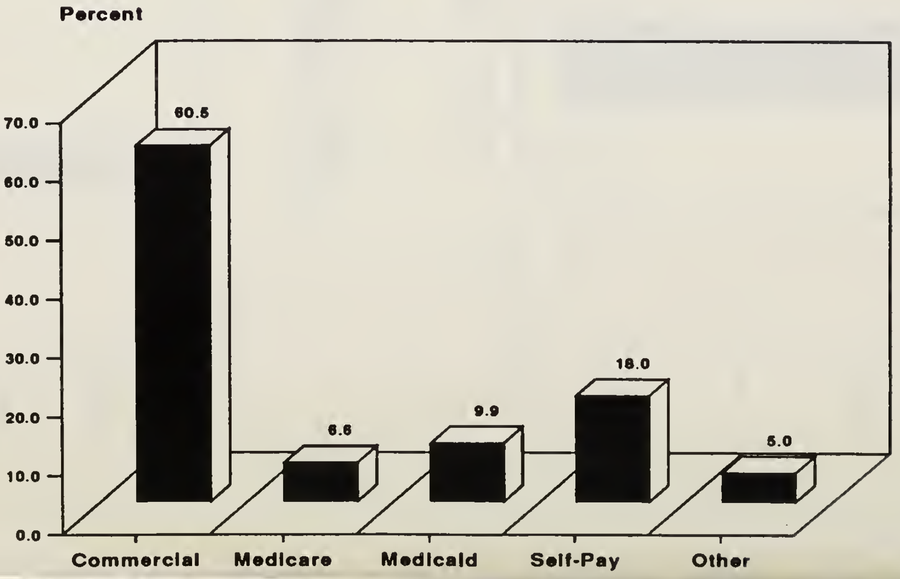


Figure 6: Percent Distribution of Non-Collision/Collision Accidents by Type in Illinois: 1989 - 1990

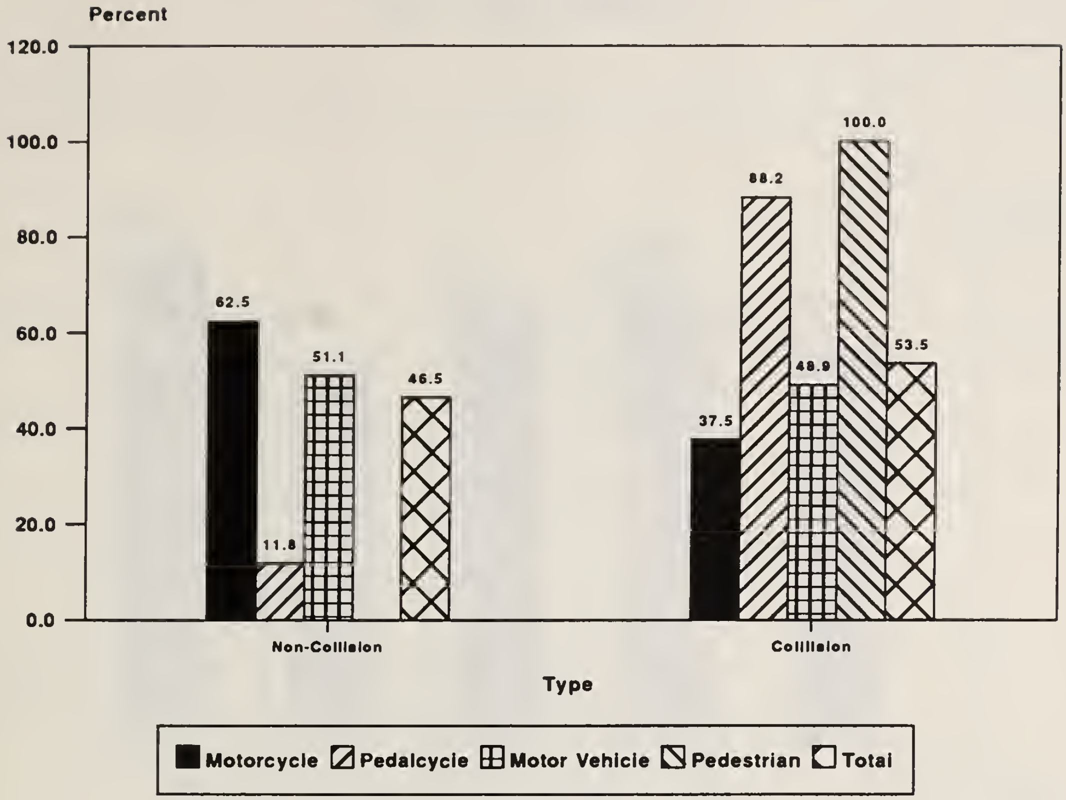


Figure 7: Percent Distribution of Primary Injury by Type of Accident in Illinois: 1989 - 1990

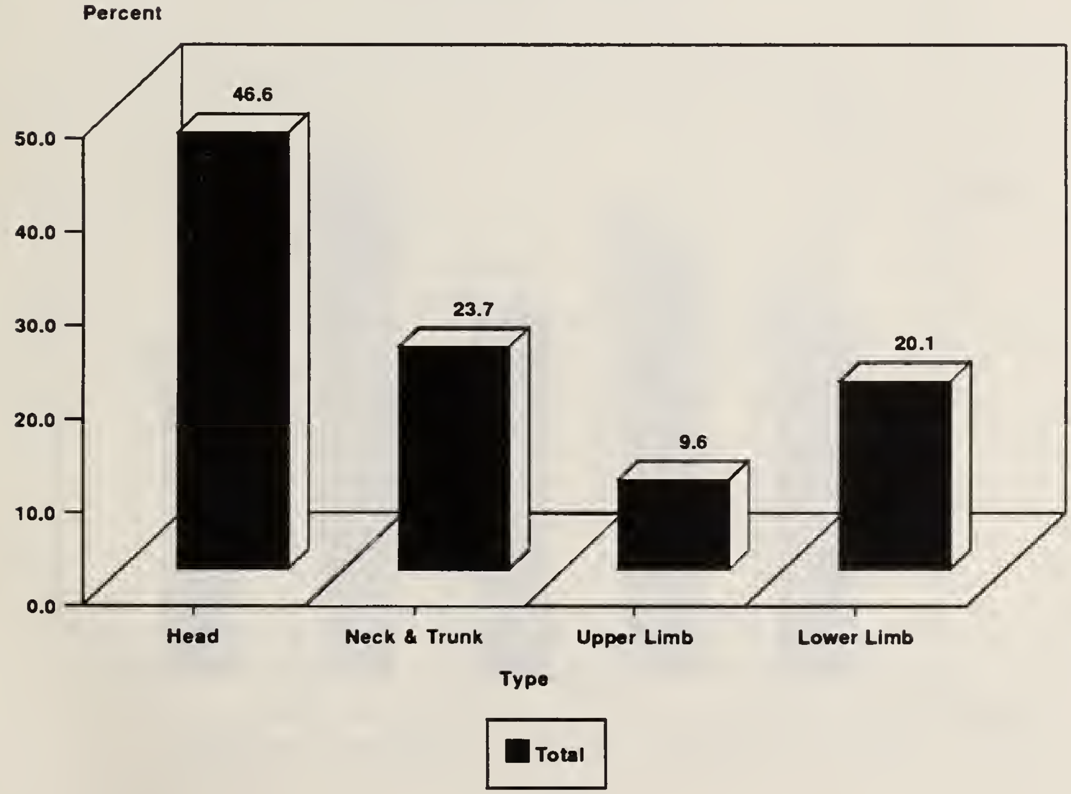


Figure 8: Average Charges by Accident Type in Illinois: 1989 - 1990

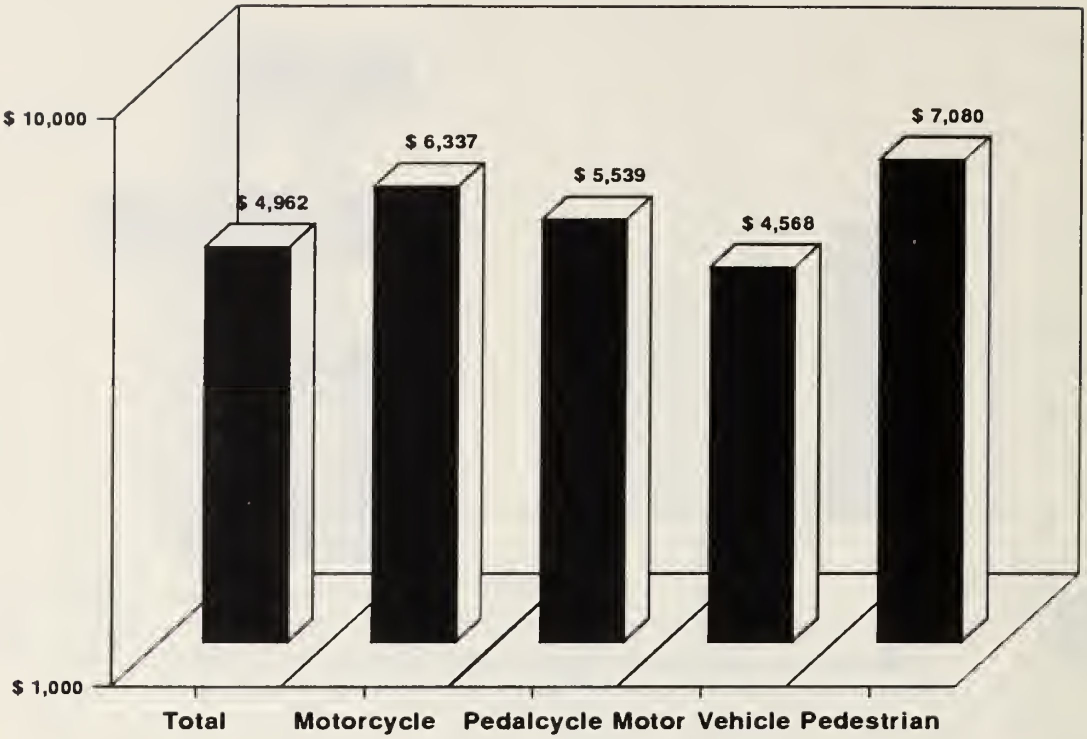
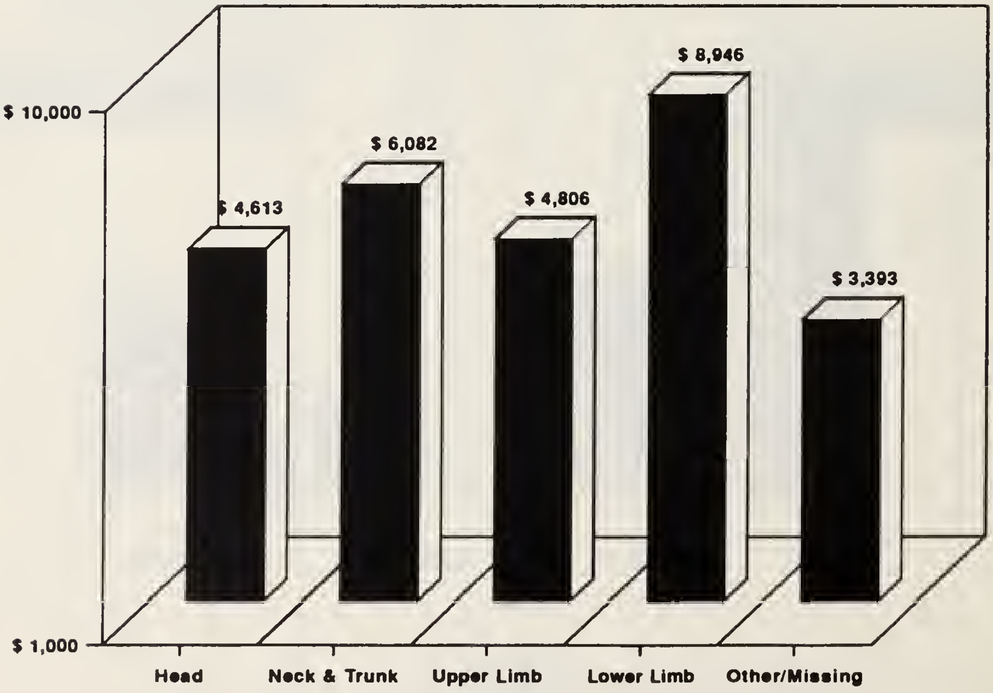


Figure 9: Average Charges by Primary Injury in Illinois: 1989 - 1990



APPENDIX 1

DEFINITION OF DATA ITEMS

Hospitals	Short-stay general hospitals (including few children and rehab-psych hospitals)
E-Codes	External Causes of injuries, poisoning, and other adverse effects. The E-codes that were used in this report, included E800 to E848
Injury Accident	It is defined as any motor vehicle accident that results in one or more injuries.
Incapacitated Injury	Any injury, other than a fatal injury, which prevents the injured person from walking, driving or normally continuing the activities he/she was capable of performing before the injury occurred. Includes severe lacerations, broken limbs, skull or chest injuries, abdominal injuries.
Motorcyclist	Any occupant, either driver or passenger, of motorcycle.
Pedalcyclist	Any occupant of non-motorized vehicle which is propelled by pedaling. Included in this pedalcycle category are bicycles, tricycles, unicycles, and big wheels
Pedestrian	Any person who is not in or on a vehicle.
Collision	It is one where the initial accident involves a collision with other vehicle, pedalcyclist or pedestrian.
Non-collision	It is one where the initial accident does not involve a collision with another vehicle, pedalcyclist or pedestrian but may involve striking an object at the roadside or is a result of the vehicle rolling over.
Payer Type	The categorization of payers that is described above was derived in a number of ways. Commercial insurance was considered to be insurance companies, HMO's or PPO's and included self-administered insurance plans. Payments by the federal government included those for patients under Medicare, those eligible for payment under federal black lung insurance and CHAMPUS (Comprehensive Health and Medical Plan) and coverage under the veterans administration. Payments made by public aid included Illinois and other Medicaid payments. Payments under "self-pay" were made by the patients. The category under "other" includes miscellaneous sources of payments which are not otherwise clearly identified. This category may include persons who are covered by an insurance company which is not on the State's list or the patient may have identified an insurance company which did not exist at the time they were admitted to the hospital.
Average Length of Stay	It is defined a the total days of hospitalization divided by the total number of discharges occurring during the specified period.
Average Total Charges	It is defined as the total of all hospital inpatient charges divided by the total number of discharges occurring in that period.

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